

ABSTRACT

TITLE OF THE ABSTRACT:

ANATOMICAL LOCALIZATION OF MOTOR ENTRY POINTS OF THE MUSCLES OF LOWER LIMB COMMONLY INVOLVED IN SPASTICITY.

DEPARTMENT: Anatomy

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DEGREE AND SUBJECT: M.D., Anatomy

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KEY WORDS:

Motor entry point, Hamstring, Adductor, Chemical neurolysis, Selective motor fasciculotomy, Spasticity

OBJECTIVES:

To study the motor entry points of the hamstring and adductor group of muscles of lower limb and to suggest ideal sites for motor point procedures such as chemical neurolysis and selective motor fasciculotomy for the treatment of spasticity in the above group of muscles.

METHODS:

The study was done after approval from the Institutional Review Board. Sample size was estimated using population mean-Absolute precision method. A total of 10 adult lower limbs from 5 formalin embalmed adult cadavers (4 male and 1 female) were chosen. All measurements were standardised, and a pilot study done to assess feasibility. The nerve branches to hamstring and adductor muscles were carefully dissected up to its motor entry point. Position of proximal and distal motor entry points were marked and the following variables measured: a) The length of muscle; b) Number of motor entry points; c) The distance of the proximal entry point (PEP) and distal entry point (DEP) from the origin of muscle; e) The position of PEP and DEP as a fraction of the length of muscle; f) Ideal site of motor entry point injection g) Ideal site of motor point injection expressed as a percentage; h) Position of PEP and DEP of hamstring muscles was described in relation to fixed X and Y axes. The data was entered into an Excel worksheet. Analysis was done using statistics such as mean, median, standard deviation, median and interquartile range with necessary percentiles. Student t-test, Pearson Correlation Coefficient, and Spearman Rank correlation coefficient was also done.

RESULTS:

The long head of Biceps Femoris has a median number of three motor entry points. The proximal and distal motor entry points were located at 35% and 51% of the total length of the muscle. Ideal site of motor point procedures is in the second-fifth and third-fifth of the muscle length. The median number of motor entry points in Semitendinosus was two. Most of the motor entry points were located between 43% and 48% of the muscle length ie, in the third-fifth of the total muscle length. Semimembranosus had a median number of three motor entry points, located between 52% and 70% of the total muscle length ie, in the third-fifth and fourth-fifth of the muscle length. The median number of motor entry points in Adductor longus was two. Most of them were located between 40% and 50% of the muscle length ie, in the third-fifth of the total muscle length. Adductor magnus and Gracilis had a median number of one and six motor entry points respectively. The ideal site of motor point procedures is in the second-fifth of the muscle length for both.